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1844, and the south building in 1854, and these two buildings stand forty-seven feet apart. It was in this space the excavation was made. These seeds have been lying dormant in all probability since 1844, as students do not generally permit such plants to grow within forty-seven feet of the college. D. A. OWEN.

Franklin, Ind.

Dispersion of seeds in Euphorbia.

It may be worth noting, in connection with the interesting remarks of Dr. Schneck on the dispersion of seeds of Euphorbia marginata (page 226), that the phenomenon is recorded in connection with other Euphorbiaceæ, especially in a small Mexican tree, there known, according to Hernandez, as 'Quauhtcatlatzin," which I suppose might be translated as the "creaking tree." In view of this Mexican term, Linnæus seems to have given it the name of Hura crepitans. De Candolle (Prodromus 18, p. 1229) remarks on it: "Cocca * * '*valde crepitanter dissilientia seminaque dejicientia.*" THOMAS MEEHAN.

Germantown, Penn.

Systematic Botany—A correction.

In the note on "the old and new botany," in the October GAZETTE, an error occurs, namely, the omission of the word *systematic* before botany in the seventh line from the last. As it stands, it reads that the general subject, *botany*, is falling into disfavor, which I am sure is not true. But it is quite clear to me that systematic botany is considered as quite detached from the living processes going on in plants, and, therefore, falling into disfavor. E. L. GREGORY.

Bryn Mawr College.

CURRENT LITERATURE.

Hepaticæ Americanæ; prepared by Lucien M. Underwood and O. F. Cook. Decades I and II. Syracuse, N. Y. 1887.

Under the above title Dr. Underwood, of Syracuse University, and Mr. Cook have begun issuing a set of *exsiccatæ* for the special encouragement of students undertaking the collection of Hepaticæ. As no preface to the set has been issued, we are authorized to say that the object of the publishers has been:

1. To issue this preliminary set more for the assistance of beginners than as a matter of *special* interest to those who have long studied the Hepaticæ. Later numbers may have a wider interest.

2. By issuing a *few* numbers to bring the price[1] within the reach of the most moderate means.

3. To issue representative (though common) species.[2] The four

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[1] The set of twenty numbers will be sent postpaid for $1.25. Address Dr. Lucien M Underwood, Syracuse, N. Y.

[2] The twenty numbers are as follows: Riccia natans, Marchantia polymorpha, Conocephalus conicus. Anthoceros lævis, Blasia pusilla, Steetsia Lyellii, Frullania Grayana, Lejeunia serpyllifolia, var. Americana, Madotheca porella, Radula complanata, Ptilidium, ciliare, Bazzania trilobata, Trichocolea tomentella, Lepidozia reptans, Kantia trichomanis, Geocalyx graveolens, Cephalozia curvifolia, Jungermania Schraderi, Scapania nemorosa Plagiochila porelloides.

orders, all the larger genera, and the thallose, incubous and succubous Jungermaniaceæ will be found represented.

4 To procure specimens as free as possible (a by no means easy task) from other and misleading plants

From an examination of the set we are prepared to say that the specimens are admirable, and leave nothing to be desired. The labels are full and are accurately printed. We sincerely hope that the au hors will be liberally encouraged not only by the purchase of sets, but also by the contribution of material; and that the sets may soon begin to include the rarer species. Certainly, the enterprise is most commendable, and must prove of great benefit to all students of Hepaticæ.

Synopsis of the Flora of the Laramie Group. By Lester F Ward Sixth Annual Report of Director of the U. S. Geological Survey, 1884-85. Washington, 1886; pp. 405-557, pl. 31-65.

Perhaps no controversy over the stratigraphic position of any of the various members in the geologic series has been waged with greater persistency than has that over the position of the member now so well known as the Laramie Group. This group was first brought to light by the pioneer investigators of the geology of our western territories, and they, together with prominent paleontologists, from considerations of its animal remains, were led to refer it to the cretaceous age. Others, equally eminent, basing their conclusions upon examinations of the plant as well as animal remains, argued for it a tertiary age So persistently have these two theories been attacked and defended that the subject has developed a copious literature of its own; and for the general student to attempt to read this and decide for himself is a nearly hopeless task. What was needed was a succinct account of the progress of opinion regarding it, irrespective of partisan feeling. This is precisely what Prof. Ward has done in the historical review of opinion which occupies the first forty pages of his memoirs, and the result must be conclusive. From this it is seen that the conclusion generally accepted at present is that the Laramie group belongs as much to the cretaceous as to the tertiary, or rather occupies a somewhat intermediate position between the two. But, as Prof Ward so pointedly suggests it makes very little difference whether we regard it as belonging to the one or to the other, so long as we clearly understand its relative position. We know positively that the next member below it is upper cretaceous and the next above it is lower tertiary.

As it is now understood, this formation, which has a thickness of more than 4000 feet of strata, occupies a vast area, extending for hundreds of miles on either side of the Rocky mountains and from Mexico to far within the British possessions. This immense inland sea was at first filled with brackish water, with at least one opening into the ocean; but afterward, through the gradual cutting off of this avenue of intercommunication, it became nearly or quite fresh. The period of change from the one to the other must have been very gradual, and have extended over an immense interval of time; long enough, indeed, as Dr. C. A White has so clearly shown, for the transformation of a distinctively brackish water molluscan fauna to a fresh water fauna, without extinction of types It is in these peculiarities that lies the explanation of the difficulty experienced in attempting to correlate this formation with others probably deposited at the same time in different parts of the world. It would be extremely improbable that precisely similar conditions should prevail in widely separated localities cut off, as we know they must have been, by barriers of both land and water that existed at that time.

In order to ascertain what answer an exhaustive examination of the plant remains would be able to give to the question, Prof. Ward has prepared an elaborate table, in which are compared all the known species found in the Senonian, Laramie and Eocene formations. The result shows that the Laramie flora resembles the one about s much as the other, which in itself proves nothing; but in the discussion which follows the table it is concluded, in a manner satisfactory to the author, at least that it has a stronger Senonian than Eocene facies. This is because more important types extend from the Senonian into the Laramie, and when, as it is well known, the vegetation was les diversified than later The flora of the Laramie period is perhaps no more remarkable than could be accounted for on the ground of the peculiar conditions which obtained at the time of its deposition. Its isolated character, its change from a brackish to a fresh water deposit, are sufficient to impress upon it a strong individuality. This examination shows more plainly than ever that the whole discussion resolves itself into a mere question of a name, and what this shall be is not of as much importance as might at first be anticipated.

This discussion is followed by the systematic portion of the paper which deals with the results of the personal observations of the author upon the flora of this group. This is in the form of a list, unaccompanied by descriptions, of the type or representative species detected in the collections made by Prof. Ward in Colorado, Wyoming and Montana. The descriptions and discussions of species are to be found in a later work, to which this list is but supplementary; and, indeed, both papers are designed as an introduction to the larger monograph which the author has in preparation.

The illustrations, which are by the photo-lithographic process, are among the best of the kind that we have seen.

Taken as a whole, this paper must be regarded as one of the most valuable contributions that have been made to the discussion of the Laramie group.*

Types of the Laramie Flora. By Lester F. Ward. Bulletin of the U. S. Geological Survey, No. 37. Washington, 1887. Pp. 1–115, pl. 1–57.

In this paper the species given in a list in the former work are described and discussed at length. The illustrations are also the same, having been rearranged to accommodate them to the reduced size of the work.*

Grasses and Forage Plants. By Charles L. Flint. Revised edition, 12°, pp. 398. Lee & Shepard: Boston, 1888.

This, although called a "revised" edition, is practically the same as that published twenty-four years ago, the only changes of any importance being confined to about half a dozen pages, where new illustrations of some more recent agricultural machines are substituted for old ones, with some cutting out and change of type to correspond. The only new matter relating to forage plants is on page 196, where a short account of Japan clover (Lespedeza striata) is introduced, and even this is not included in the systematic index. The preface is unchanged from the sixth edition of 1864, except in giving a new date—1888 instead of 1859—not even mentioning the few changes already noticed. It is, therefore, little more than a reprint of the old edition of twenty years ago. As that has been a long time before the public, its many excellent qualities are well known.

But, in a "revised edition," after the lapse of so many years some important changes or additions might reasonably have been expected. Within the last ten to twenty years the subject of grasses for cultivation has in certain portions of our country attracted very great interest. Extensive tracts of country west of the Missouri river, and southwestward in Texas and New Mexico, have been brought under culture, subject to climatic conditions very different from those of the Northern and Eastern States, and the belief is very generally entertained that the older kinds of cultivated grasses are not adapted to use there; and intelligent agriculturalists are inquiring and experimenting with reference to some grasses better adapted to their wants. Very much the same condition exists in the South Atlantic and Gulf States, where long summer droughts prevail, greatly to the injury of the grazing interests, and a number of new and promising grasses and forage plants are under trial. These points are entirely ignored in this "revised edition."

In another particular the public might naturally look for some change. This is in relation to the botanical terms and the classification employed in the description of grasses in the introductory chapter. A proper revision would have changed the botanical names of ten or twelve genera, and would have changed the application of some of the terms used in describing the parts of the flower. Thus, Calamagrostis (of our country) is now Deyeuxia, Brizopyrum is Distichlis, Lepturus (of our country) is known as Schedonnardus, our Triticums are Agropyrums, Dupontia is called Graphephorum, Gymnostichum is Asprella, etc. The application of the terms glume and palet should have been modified so as to express the modern view of the structure of grass flowers—the term glume being now extended to include what was formerly called the lower palet, and the term palet being restricted to that bract or scale formerly known as the upper palet. Several other needful changes of terms will occur to the botanist, as well as in the loose employment of the terms ovary and seed on page 15.—GEORGE VASEY.

Monographiæ Phanerogamarum. Vol. quintum, pars secunda. Ampelideæ. Auctore J. E. Planchon. Pp. 305-654. Paris, July, 1887.

Few groups of plants are more perplexing than the one forming the subject of this monograph, and as a consequence there are wide differences in its treatment. The present presentation makes some radical changes. Bentham and Hooker in their Genera Plantarum group three genera under Ampelideæ, viz.: Vitis (including Ampelopsis and the large tropical genus Cissus), with 230 species; Pterisanthes, with three; and Leea, with about twenty. Planchon, in the monograph before us, does not include Leea as being among the true Ampelideæ; accepts Pterisanthes as defined, but increases its species to eleven; and of Bentham and Hooker's Vitis makes nine genera. VITIS is left with twenty-eight species, and in it are all our American vines (sixteen in number) except the few noted further on. *V. araneosa* Leconte, from N. Georgia and Athens, Ill., is new to our manuals, and the *V. monticola* of Eng. is *V. Berlandieri* Planchon. AMPELOCISSUS is a new tropical genus of sixty-two species, heretofore included under Vitis, none of which concern us, except two in Mexico and one in the West Indies. CLEMATICISSUS is the Australian Vitis angustissima, and is monotypic. TETRASTIGMA, once a section of Vitis, and also of Cissus, is an Asiatic genus of thirty-eight species. LANDUKIA is a monotypic genus, founded upon a species which has been variously referred to Ampelopsis, Cissus and Vitis, and now rejoices in the name Landukia Landuk. PARTHENOCISSUS is *Ampelopsis* Mx., in part, and to it belongs our Virginia creeper, which is, therefore, *Parthenocissus quinquefolia* Planch., and six other species. AMPELOPSIS Mx., the other part, we get back again, not to include our old Ampelopsis, however, but some species that we have been referring to Vitis. *Vitis indivisa* Willd. is now *Ampelopsis cordata* Mx., and *Vitis bipinnata* T. & G., which was *V. arborea* L., is *Ampelopsis bipinnata* Mx. RHOICISSUS is separated from Cissus, with nine species, while CISSUS remains the largest genus, with 214 species.

The Development of the Ostrich Fern. By Douglas Houghton Campbell, Ph. D. Memoirs of the Bost. Soc. Nat. Hist., Vol. IV, No. 2. Pp. 17-52, with four plates. Boston, April, 1887.

This is the Walker prize essay of 1886, that was so worthily won by Dr. Campbell. Since that time the author has been studying in Germany with Strasburger, Pfeffer, and now with Kny, and we predict for him a very successful botanical career. The paper before us gives evidence of fine ability, and is a model in its way. It is so compact and technical that it hardly admits of a review further than a notice of its contents.

The important points discussed the author himself sums up as follows: The presence of a third coat in the spore; the marked dioecism displayed by the prothallia; formation and development of the apical cell of the prothallium; continuity of the protoplasm in the cells of the prothallium; development of the antheridium and antherozoids; absence of the ventral canal-cell in the archegonium; succession of the divisions of the embryo, and the establishment of the apical cells of its different members; development of the different tissues of the embryo; development of the leaf from the apical cell and the relation of the different tissues of the leaf to the segments of the apical cell; method of formation of the pinnæ; development of the stem from the apical cell; development of the sporangium. These subjects indicate the completeness of the study. A very interesting fact brought out is the vitality of the spores, and the ease with which they can be germinated. The plant can thus be had at any time for study.

Illustrationes floræ insularum maris Pacifici. E. Drake Del Castillo. Fascicles I–III. Quarto. G. Masson, Paris, 1886–1887.

The author proposes to issue from time to time fascicles of ten species; each species with descriptive text and a full page lithographic plate. Not all the Pacific island species are to be included, but those that are new, rare, or especially interesting. In the resumé of the publications concerning the flora of this region one is surprised at its copiousness. The three fascicles before us bring us thirty species, many of them new, and thirty plates. It is one of those works that demonstrate the highest possible skill of the printer and engraver, and to which one sits down as to a book of fine engravings. The typography, although of marvelous clearness, can be equaled in this country, but it is to these matchless European engravings that we must yield. Our artistic engravings, such as appear in *Century* or *Harper*, are fine enough, but our scientific engraving and plate printing, compared with that in the work lying before us, is dreadfully coarse. The explanation probably lies in the fact that all such work here must be done as cheaply as possible, and of course in an inferior way.

Parasitic Fungi of Illinois. Part II, Erysipheæ. (Bulletin of the Illinois State Laboratory of Natural History, Vol. II, No. 6.) By T. J. Burrill and F. S. Earle. Peoria, 1887. 8°, pp. 46. Illustrated.

The surface mildews have been elaborated in the present paper with the same thoroughness and discriminating judgment that the rusts received in the first contribution to the parasitic fungi of the state. The introduction deals with their structure, development and classification, together with an account of the parasite, Cincinobolus. The genera are illustrated after the manner of Winter in the "Flora von Deutschland," and are provided with a key.

Twenty-eight species are admitted, with full diagnoses drawn from the specimens in hand, the synonymy traced, each host with its locality and herbarium number given, and critical remarks appended. The list embraces all the species enumerated by Trelease for Wisconsin (Parasitic Fungi of Wisconsin), by Bessey for Iowa (Bull. Iowa Ag. Coll.), by Rose for Indiana, except one (BOT. GAZ., ix), and forty-two of the sixty-one species given by Bessey for the whole United States (the Erysiphei), with two in addition.

The feature which gives a value beyond that of a local list is the careful study of the limits of the species, and the consequent synonymy. The forty-two species of Bessey's United States list, with two not in it, making forty-four, are reduced to twenty-eight, showing an actual condensation of more than one-third, although two of the species were doubled instead of contracted. The principal changes are as follows:

PRESENT NAMES.	FORMER NAMES.
Sphærotheca Humuli (DC.) Burrill.	S. Castagnei in part.
Erysiphe Galeopsidis DC. . . .	E. lamprocarpa in part.
Erysiphe Cichoracearum DC. . .	E. lamprocarpa in part. E. Montagnei. E. horridula.
Uncinula Salicis (DC.) Winter . .	U. adunca. U. heliciformis. U. leuculenta.
Podosphæra Oxyacanthæ (DC.) DeBary	P. Kunzei. P. trydactyla. P. minor. P. Myrtillina.
Microsphæra Quercina (Schw.) Burrill	M. extensa. M. abbreviata.
Microsphæra Alni (DC.) Winter . .	M. Hedwigii. M. penicillata. M. pulchra. M. Friesii. M. Platani. M. Van Bruntiana. M. Viburni.

Furthermore, Erysiphe communis is made to include E. Martii, and Uncinula Ampelopsidis to include U. Americana, U. spiralis and U. subfusca. It is now also pointed out that the gooseberry mildew belongs to Sphærotheca Mors-Uvæ, and not to S. pannosa, while the clematis mildew is Erysiphe communis, and not E. tortilis; changes which appear to be necessitated by former errors of determination. The data and conclusions given under Podosphæra Oxyacanthæ are essentially the same as published in this journal three years and a half ago by one of the authors, but the fact is not mentioned.

Few classes of fungi were in greater need of revision than the surface mildews, and the advancement made by Dr. Burrill and Mr. Earle in this paper will doubtless, in the main, meet with the approval of systematists. A change, the value of which might be questioned, is the placing of so many forms under M. Alni, including the exclusively American one on lilac. Culture experiments are much needed to throw more light upon points like this.